Please **cancel** claim 2. **Please also amend** claims 1, 3, and 4 and add new claims 5 and 6 as shown in the complete list of claims that is presented below.

1. (currently amended) A fast gamma correction method for ~~an~~ image reading apparatus with a color correction function and a plurality of normalized output pixel data after correction Y quantified by n-bits into $2^n$ intervals, comprising the following steps:

a. ~~provided that the image reading apparatus has a plurality of normalized output pixel data after correction Y quantified by n-bit into $2^n$ intervals,~~ combining the $2^n$ intervals ~~are combined~~ to M merged ~~interval, wherein~~ intervals, comprising the following steps:

a0: set k=0;

a1: set h=k;

a2: set k=k+1;

a3: if k=$2^n$, stop;

a4: if s is within (h,k), and all $X_T$, T=0..$2^m$-1, in $(G^{-1}(T_s), G^{-1}(T_{s+1}))$, are equal to all $X_T$, T=0..$2^m$-1 in $(F^{-1}_{(h,k)}(T_s), F^{-1}_{(h,k)}(T_{s+1}))$, back to step a2;

a5: merging $(T_h, T_{h+1})$~$(T_{k-1}, T_k)$ into $(T_h, T_k)$, and recoding $F_{(h,k)}(.)$; and

a6: back to step a1;

wherein

m: resolution of normalized input data,

n: resolution of normalized output data,

Y=G(X): realistic color correction function,

$F_{(h,k)}$ (.) fitting function in interval $(T_h, T_k)$, and

$M \leq 2^n$, ~~the color correction function for the image reading apparatus is represented~~ ~~by a simple fitting function in each merged interval~~;

b. reading a normalized input pixel data X and locating which merged interval the input pixel data X ~~lie in~~ lies in, wherein threshold values of the X coordinate can be obtained by inversely mapping threshold values of the Y coordinate; and

c. finding the normalized output pixel data after correction Y by ~~approximated~~ a fitting function in the merged interval and using the normalized input pixel data X for substitution.

Claim 2 (cancelled).

3. (currently amended) The fast gamma correction method for an image reading apparatus as in claim 1, wherein in step a, the ~~simple~~ fitting function is a non-transcendental function ~~such as polynomial function or exponential function~~.

4. (currently amended) The fast gamma correction method for an image reading apparatus as in claim 1, wherein image reading apparatus ~~can be~~ is selected from the group consisting of a scanner, a digital still camera, ~~or~~ and a video camera.

5. (new)  The fast gamma correction method for an image reading apparatus as in claim 3, wherein the non-transcendental function is a polynomial function.


6. (new)  The fast gamma correction method for an image reading apparatus as in claim 3, wherein the non-transcendental function is an exponential function.